ST1102A, ST1144A

AT Interface Drive

Installation Guide

Seagate

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Seagate

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Before You Begin...

This installation guide supports Seagate's ST1102A and ST1144A Drives, ROM 5.0, RAM 5.5 or greater.

Always verify that the system power is off before attempting any installation

Inspect the drive, cables, mounting hardware/accessories, documentation and packaging. If any item is incorrect, missing or appears damaged, contact your Distributor or Dealer immediately.

Important Handling Notes: Improper handling during transit/shipping accounts for many "installation" problems. Do not attach any labels to the drive top cover as they may obstruct the breather holes. Always handle the drive carefully.

Observe Static-Discharge Precautions: Keep the drive in the static-shielded bag until you are ready to complete the installation. Use a grounded wrist-strap at your workstation; if unavailable, ground yourself frequently by touching the metal chassis of the system before handling any components. Avoid static-inducing carpeted areas.

Shipping: When transporting or shipping a drive or controller, a Seagate-approved container **must be used.**

Keep your original box. They are easily identified by the *Seagate Approved Package* label. **Shipping a drive in a non-approved container will void the drive warranty.**

Seagate service centers may refuse receipt of components improperly packaged or obviously damaged in transit. Contact your Authorized Seagate Distributor to purchase additional boxes. Seagate recommends shipping by an air-ride carrier experienced in handling computer equipment.

Maintenance: Seagate disc drives do not require any preventive maintenance. The head/disc assembly is sealed and does not contain any user-serviceable components. Tampering with the factory-seal will void the warranty.

Seagate customer service centers are the only facilities authorized to service Seagate drives. Seagate does not sanction any third-party repair facilities. Any unauthorized repair or tampering with the factory-seal will void the warranty.

Warranty: Contact your Seagate Authorized Distributor or your Dealer for warranty information.

End-User Technical Support: Seagate maintains a 24-hour bulletin board service. This facility offers up-to-date product technical support.

Modem Number: 408/438-8771 [300-9600 HST, MNP 3/5, N-8-1]

This is a toll call.

FCC Verification

This equipment has been tested with a Class B computing device and has been found to comply with Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses and can radiate radio frequency energy, and if not used in accordance with the instructions, may cause harmful interference to radio communications.

If this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Move the equipment away from the receiver.
- Plug the equipment into an outlet on a circuit different from that to which the receiver is powered.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions.

Caution: Any changes or modifications to the equipment by the user not expressly approved by the grantee or manufacturer could void the user's authority to operate such equipment.

Note: This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the Radio Interference regulations of the Canadian Department of Communications.

1.0 Drive Capacity and Geometry

1.1 ST1102A Formatted Capacity

The following specifications are maximum logical numbers. Available capacity depends on the drive type geometry supported by your system BIOS.

Guaranteed Megabytes:	89.1
Guaranteed Sectors:	174,080
Sectors per Cylinder:	255
Bytes per Sector:	512
Bytes per Track:	8,704
Bytes per Cylinder:	130,560

1.1.1 ST1102A Translation (Default) Drive Organization

Maximum logical drive geometry numbers are listed below. These numbers can vary for drive type, as long as they do not exceed the maximums specified and the following product:

(Sectors/Track) (Cylinders) (Read/Write Heads) is less than or equal to the maximum guaranteed sectors.

	Default
Sectors per Track:	17 max
Cylinders:	1,024 max
Read/Write Heads:	10 max

1.2 ST1144A Formatted Capacity

The following specifications are maximum logical numbers. Available capacity depends on the drive type geometry supported by your system BIOS.

Guaranteed Megabytes:	130.7
Guaranteed Sectors:	255,255
Sectors per Cylinder:	255
Bytes per Sector:	512
Bytes per Track:	8,704
Bytes per Cylinder:	130,560

1.2.1 ST1144A Translation (Logical) Drive Organization

Maximum logical drive geometry numbers are listed below. These numbers can vary for drive type, as long as they do not exceed the maximums specified and the following product:

(Sectors/Track) (Cylinders) (Read/Write Heads) is less than or equal to the maximum guaranteed sectors.

	Default	**Other**
Sectors per Track:	17 max	17 max
Cylinders:	1,001 max	1,024 max
Read/Write Heads:	15	14

2.0 Drive Setup and Installation

Important Note: All ST412 interface drive and controllers must be removed from the system.

2.1 Master/Slave Selection

A master/slave relationship must be established between drives on the AT bus.

Drive 1 is configured as the master and drive 2 is designated as the slave. The Master jumper (pins 3-4) and Slave Present jumper (pins 5-6) are noted in Figure 1 on page 8.

	Master Jumper	Slave Present Jumper
Single Drive System	Install Jumper	Remove Jumper
Drive 1 in a 2-Drive System	Install Jumper	Install Jumper
Drive 2 in a 2-Drive System	Remove Jumper	Remove Jumper

2.2 Remote LED

When pins 9-10 at the User Configuration Jumper are shorted, the drive will indicate activity to the host via the AT interface.

2.3 Drive Mounting and Cabling

The drive may be mounted horizontally with the PC board down or on either side-edge. Mounting vertically, front panel up or down is prohibited. Required for mounting: 4, 6-32 UNC-2B X 0.150 screws.

Maximum cable length: 18-inches

2.4 AT Host Adapter Support

Seagate offers two AT Host Adapters. They are both half-slot boards, which provide a 40-pin AT interface connector for systems lacking an AT interface drive connector on the system motherboard.

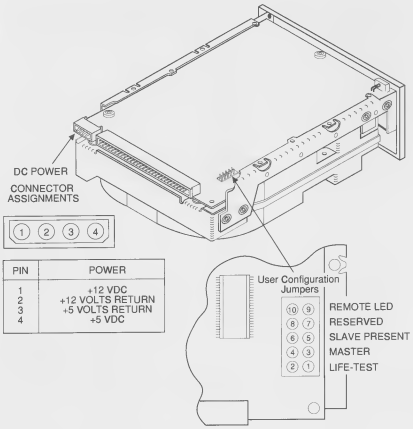
The ST07A/ST08A support two AT interface drives. They provide address decoding for hard drive I/O and buffering of signals between the host and the hard drive.

The ST08A supports up to two floppy diskette drives:

- 5.25-inch, 360 Kbyte/1.2 Mbyte
- 3.5-inch, 720 Kbyte/1.44 Mbyte

An auxiliary DC power connector is provided on both boards.

Figure 1: ST1102A / ST1144A AT Interface Drive



Important Note: The Life test jumper is used during the manufacturing process and is not recommended for field use.

3.0 Drive Partitioning and Formatting

- Required: DOS 3.3 or greater
- The ST1102A and ST1144A are low-level formatted at the factory. **Do not low-level format. Doing so will delete important factory-written defect information.**
- Run FDISK for drive partitioning and then high-level format with the DOS FORMAT command.
- Be sure to transfer the DOS systems files, if a bootable drive is required. Consult your system DOS manual for running FDISK and FORMAT.

3.1 Supported System BIOS and Drive Types

The ST1102A and ST1144A are AT Interface compatible drives. The following BIOS manufacturers have indicated that the listed BIOS revision levels are fully AT Interface compatible.

Earlier BIOS revisions may provide partial AT Interface support. If compatibility problems occur, please contact your system manufacturer

Refer to table on page 10.

BIOS Mfg.	Version	ST1102A	ST1144A
AMI	4/9/90 or later	35*	9, 47*, 45*
Award	3.04 or higher	33*	9, 41*
Quadtel	Single Drive: Any Version Dual Drive: 3.04 or higher	40*	9
Phoenix	ROM BIOS Plus 286 3.10 or higher ROM BIOS Plus 386 1.10 or higher	35*	9, 41*
PhoenixBIOS	1.00 or higher	35*	9, 41*

*** Implementation of these drive types may vary by system manufacturer.**

ECC Bytes: The ST1102A and ST1144A use 4 bytes of ECC with Read/Write Long Commands. Based on drive type, some BIOS look for 7 bytes of ECC. If the BIOS expects 7 bytes, some drive diagnostics will return false failures (typically timeout errors).

3.1.1 Drive Type Geometry

Drive types are selected and entered in the system CMOS during setup. Match your drive type to one tabulated below:

Drive Type	Cylinders	R/W Heads	Sectors/Track	Formatted MBytes
33	1,024	10	17	89.1
35	1,024	9	17	80.2
40	1,024	9	17	80.2
9	900	15	17	117.5
41	917	15	17	119.7
47	1,024	14	17	124.7
45	917	15	17	119.7

If you have a system BIOS which offers a "user-defined" drive type, select from the following drive configurations:

Drive	Cylinders	R/W Heads	Sectors/Track	Formatted MBytes
ST1102A	1,024	10	17	89.1
ST1144A	1,024	14	17	124.7
ST1144A	1,001	15	17	130.7

Note: Formatted megabytes are calculated using one megabyte equals 10^6 bytes.